

STATE OF CALIFORNIA  
REGIONAL WATER QUALITY CONTROL BOARD  
LOS ANGELES REGION

CLEANUP AND ABATEMENT ORDER NO. 98-001  
ISSUED TO  
MOBIL BUSINESS RESOURCES CORPORATION

Requiring Mobil Business Resources Corporation to assess, and clean-up and abate the effects of petroleum hydrocarbons, including the gasoline additive methyl tertiary butyl ether, discharged to soil and groundwater.

The California Regional Water Quality Control Board, Los Angeles Region ("Regional Board" or "LARWQCB") herein finds:

1. Mobil Business Resources Corporation (Mobil) Service Station No. 18-LDM, (formerly known as 11-LDM), and hereby referred to as "subject site" or "facility", is located at 12054 Wilshire Boulevard, Los Angeles, California (Figure 1). Facility operations reportedly began during November 1967 and ended during June 1997. Facility operations historically consisted of retail gasoline sales, automobile repair and maintenance, and more recently included mini-mart convenience sales.
2. Mr. Thomas H. Turner, a private citizen, and the City of Santa Monica ("City") each own separate portions of the subject site. The City owns an approximate 100 foot long by 50 foot wide section (Lot 1 of Tract 8038) of the western portion of the subject site which is currently used for subsurface water conveyance lines. Mr. Turner owns the remainder of the subject site. Historically, Mr. Turner leased his portion of the subject site to Mobil. Mr. Turner also leased the remainder of the subject site from the City and then subleased it to Mobil.
3. The subject site is located within the Arcadia Sub-basin in the Santa Monica Groundwater Basin of the Los Angeles Coastal Plain. The Regional Board adopted a Revised Water Quality Control Plan (Basin Plan) for the Los Angeles Region on June 13, 1994. The Basin Plan designates the following beneficial uses for groundwater within the Santa Monica Groundwater Basin: municipal and domestic supply, agricultural supply, industrial process supply, and industrial service supply.
4. The City of Santa Monica Water/Wastewater Division operates the Arcadia Wellfield and water treatment plant located at 1228 South Bundy Drive, Los Angeles, California. The Arcadia Wellfield currently consists of two municipal supply wells (Arcadia Well No. 4 and Arcadia Well No. 5). Historically, up to ten additional production wells and/or borings were operated and/or installed as part of the Arcadia Wellfield. These ten production wells and/or borings were reported by the City to have been legally abandoned. Up to six additional production wells and/or borings have been tentatively identified within the

Arcadia Wellfield. The subject site is located less than 250 feet north of the Arcadia Wellfield.

5. During August 1995, methyl tertiary butyl ether (MTBE) pollution was detected by the City in water samples obtained from production wells in the Arcadia Wellfield at concentrations less than 20 µg/L. The Regional Board was notified by the City of the MTBE pollution within the Arcadia Wells during June 1996. Arcadia Well No. 5 was shut down by the City on August 27, 1996. The highest concentration of MTBE detected in this well was 86.5 µg/L. Arcadia Well No. 4 was shut down by the City on October 17, 1996. The highest concentration of MTBE detected in this well was 19.6 µg/L. The City previously operated the Arcadia Wellfield with an average pumping rate of approximately 250 gallons per minute (gpm) but has since ceased all production as a result of the MTBE pollution. The reported maximum production capacity of the Arcadia Wellfield (Arcadia Well No. 4 and No. 5) is approximately 600 gpm.
6. The Regional Board submitted a written request for information concerning the City's Arcadia Wellfield operations on January 28, 1997. The City's response was received on February 25, 1997. The Regional Board determined the information received on February 25, 1997, was not an adequate response to the January 28, 1997, letter and the Regional Board submitted a second written request to the City on March 13, 1997. The second written request from the Regional Board also contained three additional information requests. The City's response to the March 13, 1997, Regional Board letter was received on March 25, 1997. After the City's March 25, 1997, response was received, the Regional Board needed further clarifications and information. From this point on, verbal requests were made by the Regional Board staff and complete data was received on May 1, 1997. Information gathered as a response to the verbal requests indicate that MTBE was detected by the City as early as September 8, 1994, at a reported concentration of 39.94 µg/L from Arcadia Well No. 5.
7. MTBE is a volatile, colorless, synthetic, organic ether, with a turpentine-like odor; there are no known natural sources of MTBE. MTBE contains 18.2 percent oxygen by weight with physical properties similar to light gasoline. MTBE, in small concentrations, has been added to gasoline as an octane booster since the 1970s. As a result of the Clean Air Act Amendments (CAAA) of 1990, MTBE has been added in larger concentrations to gasoline. Since 1988, the United States Environmental Protection Agency (USEPA) has allowed the addition of MTBE up to 15 percent by volume in oxygenated gasoline and up to 11 percent by volume in reformulated gasoline. The reformulated gasoline distributed at the subject site contained MTBE as a gasoline additive. Mobil has reported using MTBE consistently as a gasoline additive since November 1, 1992.
8. No formal health based standards, such as a maximum contaminant level (MCL), for MTBE have been established. The State of California Office of Environmental Health Hazard Assessment (OEHHA) has issued an Interim Action Level for MTBE in drinking water at 35 µg/L. This is analogous to a "health advisory," which if exceeded, the water supplier is advised to find another source of drinking water. The USEPA is currently developing a Drinking Water Lifetime Health

Advisory for MTBE and has tentatively identified MTBE as a possible human carcinogen. During December 1997, the USEPA-Health and Ecological Criteria Division, Office of Science and Technology, Office of Water, issued a "Drinking Water Advisory: Consumer Acceptability Advice and Health Effects Analysis on Methyl Tertiary Butyl ether (MTBE)." This Advisory recommends keeping the levels of MTBE contamination in the range of 20 µg/L to 40 µg/L or below to protect consumer acceptance of the water resource and would also provide a large margin of exposure (safety) from toxic effects. The Advisory supersedes previous draft advisories. When adequate data becomes available, the Office of Water will publish another Advisory that includes quantitative estimates of health risk. An MCL has not been established by the USEPA or the State of California Department of Health Services (DHS) for MTBE. The taste and odor threshold for MTBE in water is variable, but can be tasted at levels as low as 39 µg/L and its odor detected at levels as low as 5 µg/L.

9. The chemical properties of MTBE, an ether, are significantly different from the aliphatic and aromatic hydrocarbons (Benzene, Toluene, Ethylbenzene, and Xylene's) compounds found in gasoline. The aromatic hydrocarbons are commonly referred to as BTEX. The significant differences between these compounds are evident in the way that groundwater contaminant plumes containing MTBE and BTEX propagate, such as at the Mobil site. MTBE is one to two orders of magnitude more soluble in water than BTEX. MTBE, while volatile as a pure product, is not very volatile once mixed with groundwater. MTBE is also significantly less volatile when dissolved in water than BTEX. Compounding this is the fact that MTBE is also less retarded in soils or groundwater than BTEX. These are some key factors which make MTBE extremely mobile in groundwater and soils.
10. On October 8, 1997, Governor Pete Wilson signed Assembly Bill 592, (Kuehl). Assembly Bill 592 requires the DHS to adopt primary and secondary drinking water standards for MTBE. The secondary standard must be adopted by the DHS by July 1, 1998, and the standard must not exceed a consumer acceptance level for MTBE. The primary drinking water standard for MTBE must be established by the DHS by July 1, 1999.
11. Regional Board staff have reviewed and evaluated technical reports containing site underground storage tank operation information and soil and groundwater assessment data generated and provided by Mobil for the subject site. The Regional Board has issued letters directing Mobil to take certain actions, the following findings are based upon that review and evaluation:
  - a. Historically three fuel underground storage tanks have been operated at the subject site. During 1982, three existing steel tanks were removed and replaced with three single-walled fiberglass tanks. The single walled fiberglass tanks were in operation at the subject site from 1982 until June 1997, when Mobil ceased operations at the subject site. The three single-walled fiberglass tanks were removed from the site during October 1997.
  - b. Although the date(s) and amount(s) of the initial and subsequent unauthorized release(s) of gasoline at the subject site are not completely known, there appears to have been multiple leak and/or spill episodes at

the subject site. The initial release was reported during November 1987, which was identified during the installation of groundwater monitoring wells at the subject site. Subsequent leaks and/or spills were identified with the last reported leak during January 1997. The initial gasoline release investigation was under the jurisdiction of the City of Los Angeles Fire Department and the case was referred to the Regional Board on June 27, 1988.

- c. In 1987, as part of an underground storage tank leak detection investigation, detectable concentrations of total petroleum hydrocarbons (TPH<sub>G</sub>) were confirmed by analysis of soil samples obtained from soil test borings completed to assess leakage from three underground storage tanks located at the subject site (LDM-1 [southwest], LDM-2 [southeast], and LDM-3 [north]). See attached Figure 2 for soil test boring and groundwater monitoring well locations. Soil samples from test boring LDM-1 contained the highest concentrations of TPH<sub>G</sub> 1,300 mg/kg at 15 feet below ground surface (bgs). Benzene, toluene, ethylbenzene, and total xylenes (BTEX) and MTBE were not initially analyzed in soil samples obtained from these soil test borings completed on-site.
- d. A soil gas survey was conducted at the subject site during September 1990. The results of that survey, based on gas chromatogram signatures of the gasoline constituents identified, indicated that there had been multiple gasoline releases at the subject site. The "fresher" gasoline identified in soil samples was centered around the southern gasoline dispenser pump island. "Slightly weathered" gasoline was identified and centered around the northern pump island complex, and "extensively weathered" gasoline was identified in the soils north of the underground storage tank cluster. As of December 1996, the southern pump island was decommissioned.
- e. Approximately 0.17 feet of free-phase gasoline product was identified at the subject site (Well LDM-2) during November 1988. The free-phase gasoline product was periodically removed from on-site wells by bailing from February 1992 through March 1997.
- f. TPH<sub>G</sub> and BTEX releases have been confirmed by analysis of soil and groundwater samples collected from shallow soil test borings and groundwater monitoring wells installed on- and off-site. A groundwater pollution plume extends off-site to the south, southwest, and southeast from the subject site toward and beyond the City's Arcadia Wellfield. The highest concentrations of TPH<sub>G</sub> and BTEX in groundwater underlying the Mobil site, at present, are 3,400 µg/L and less than 400 µg/L, respectively. The lateral and vertical extent of TPH<sub>G</sub> and BTEX, contamination in groundwater at the subject site and off site has been adequately defined.
- g. During September 1990, a single soil sample from a depth of 15 feet bgs northwest of the tank cluster was analyzed for MTBE. MTBE was not detected in this sample. No soil samples were collected and analyzed for

MTBE from any other location (i.e., from the more recent release areas near the north or south pump islands). Mobil has reported that MTBE was identified in groundwater from on-site and off-site groundwater monitoring wells sampled on August 7, 1996. The highest concentrations of MTBE detected at the site was 200,000 µg/L. At the present time, MTBE concentration in shallow groundwater underlying the subject site, from data obtained at extraction well MW-3R, is approximately 30,000 µg/L.

- h. Mobil submitted a Phase 1A Workplan for the installation of shallow borings and groundwater monitoring wells on November 8, 1996. A Revised Phase 1A Workplan was submitted by Mobil on November 20, 1996, and approved by the Regional Board on December 5, 1996. The results of the Phase 1A investigation did not determine the extent of soil and groundwater contamination resulting from gasoline leaks at the subject site and therefore a Phase 2A Investigation Workplan was required to be submitted by March 12, 1997.
- i. A Phase 2A Investigation Workplan was submitted by Mobil on March 21, 1997, with the objectives to investigate potential sources and to delineate the lateral and vertical extent of gasoline contamination in the vicinity of the site and the Arcadia Wellfield, and to investigate potential pathways by which MTBE may have migrated to Arcadia Wells No. 4 and No. 5. In order to achieve these objectives various work activities were needed to be completed and these included: the generation of accurate vicinity and areawide maps; historical document review for potential sources; site specific, areawide, and regional geology and hydrogeology; historic operations at the Arcadia Wellfield; collecting and analyzing samples from Arcadia Wells No. 4 and No. 5; installation of soil test borings and multi-zone groundwater monitoring well network; periodic sampling and testing of the groundwater monitoring well network; geophysical surveys and investigations; aquifer pumping tests, adequate review and evaluation; and detailed reporting of all data generated.

The Phase 2A Investigation Workplan was conditionally approved on May 7, 1997, except for sections pertaining to the geophysical surveys, abandoned well investigation, and aquifer pump testing. These sections of the Phase 2A Investigation Workplan did not provide adequate details needed for review and approval, and Mobil requested to separate out these work activities in order to proceed with the other required work including the installation of soil test borings/groundwater monitoring wells, geophysical logging, and sampling of groundwater monitoring wells. Implementation of the soil test boring and well installation program was to commence by May 21, 1997. Mobil was re-notified of the May 21, 1997, start date by Regional Board staff during a teleconference call on May 20 and May 22, 1997. The Regional Board issued a delinquent Phase 2A Investigation Work letter on May 22, 1997, instructing Mobil to commence with the drilling, installation, logging, and sampling of deep soil borings and clustered groundwater monitoring wells by May 29, 1997. On August 11, 1997, the Regional Board issued a Revised Schedule of Compliance for Interim Mitigation Measures and Phase 2A Investigation Workplan

activities to Mobil. The August 11, 1997, letter required Mobil to commence the drilling program by August 20, 1997. Mobil commenced drilling program on August 21, 1997.

- j. The Phase 2A Investigation work which Mobil is currently implementing included the installation of additional groundwater monitoring wells to identify the full extent of the MTBE plume. Based upon results from the partial Phase 2A Investigation Technical Report received on November 17, 1997, the full extent of MTBE pollution has not been adequately defined. Since MTBE does not attenuate like the aliphatic and aromatic compounds found in gasoline, the leading edge of the MTBE plume extends far beyond the TPH<sub>G</sub> and BTEX plumes. Groundwater monitoring well MW 21b, installed approximately 900 feet to the south of the subject site detected MTBE at 210 µg/L in recent groundwater testing. The results from sampling and testing at groundwater monitoring well clusters MW 16 and MW 20, installed approximately 150 feet and 900 feet to the southeast of the site, respectively, have not been received to date.

The Regional Board issued letter dated December 10, 1997, to Mobil stating that the partial Phase 2A Investigation Technical Report submitted to the Regional Board on November 17, 1997, is not considered to be a complete final technical report for the following reasons: the Long Term Pumping test has not been completed; the drilling and installation of all groundwater monitoring wells required for the Phase 2A Investigation have not been completed as well as the associated sampling and testing; the pathway investigations have not been completed; and that incomplete final technical reports have been submitted for the 24 Hour Pumping Test and the Additional (Surface and Downhole) Geophysical Survey.

Installation of all groundwater monitoring wells required under the Phase 2A Investigation were reported by Mobil to be completed on or about December 11, 1997. The first round of comprehensive groundwater sampling, to include all on-site and off-site wells, was completed during the week of December 15 through 19, 1997.

- k. The detection of MTBE through laboratory analysis in groundwater samples obtained from on-site and off-site groundwater monitoring wells, and the close proximity of the subject site to Santa Monica's Arcadia Wellfield, indicates that the facility is the source of the MTBE pollution impacting the municipal water supply wells (Arcadia Well No. 4 and Arcadia Well No. 5) operated by the City. Mobil has not provided any definitive information identifying other facilities as contributors to the MTBE pollution impacting Arcadia Wells No. 4 and No. 5.
- 11. The presence of MTBE pollution in the Arcadia Wellfield caused the City to terminate use of water from Wells No. 4 and No. 5 for municipal supply to its residents. The City acquired alternative supply water from the Metropolitan Water District (MWD). The City has provided information to the Executive Officer demonstrating that since September 1996, it has incurred additional cost to

replace the water from wells No. 4 and No. 5. Prior to closure of the two production wells, the City reportedly pumped up to 45 acre feet per month from the wells combined. The MWD has been charging the City up to \$453.85 per acre foot for the replacement water, which like the well water, enters the City's treatment system, and is then distributed to its customers. Prior to closure of wells No. 4 and No. 5, the City's reported cost for pumping water from the wells to its treatment system was \$9.86 per month, consisting of the cost of power to operate the pumps.

The increased cost to the City to provide its customers with potable water following closure of the wells is \$443.99 per acre foot (\$453.85 - \$9.86). At 45 acre feet per month, the City's total cost per month to replace the water from wells No. 4 and No. 5 is \$19,980. The City's cost between September 1996 and February 1997 for replacement water was \$104,096.

12. On February 18, 1997, the Acting Executive officer of this Regional Board entered into a Consent Agreement for Cleanup and Abatement Activities with Mobil requiring; (1) further investigations, reporting, and on- and off-site cleanup of wastes discharged; and (2) continuation of negotiations with the City toward an agreement for water replacement costs. A deadline of March 1, 1997, was specified for the latter task. No agreement was reached between Mobil and the City.
13. On March 7, 1997, the Acting Executive officer of this Regional Board issued Cleanup and Abatement Order No. 97-029, directing Mobil to (1) provide evidence by March 21, 1997, that it had paid the City of Santa Monica for past water replacement costs for the period September 1996 through February 1997; and (2) required Mobil to pay the City's replacement water costs on a monthly basis. Mobil paid the replacement water costs accrued between September 1996 and February 1997, on March 21, 1997. Mobil commenced paying \$18,980 per month to the City of Santa Monica, on April 1, 1997. This amount is \$1,000 less than the total cost per month to replace the water from Arcadia Wells No. 4 and No. 5.
14. On April 22, 1997, the Acting Executive officer of this Regional Board entered into a Memorandum of Understanding (MOU) with the Director of Waste Management Division, USEPA. The purpose of the MOU is to facilitate successful coordination of a partnership between the LARWQCB and the USEPA, with input from impacted and other interested parties, to address the impacts from MTBE pollution at the Arcadia Wellfield and within the Charnock Sub-basin.
15. On March 17, 1997, Mobil submitted the Interim Measures Workplan (IMW) for Mobil Oil Service Station 18-LDM, for the remediation of petroleum hydrocarbons (including MTBE) in the vicinity of the site. On April 24, 1997, the Regional Board approved the IMW. The objectives of the IMW included: (1) extraction of contaminated groundwater at the subject site and above-ground treatment; (2) soil boring investigation program; (3) extraction of contaminated groundwater

from monitoring wells located along Bundy Drive; and (4) detailed evaluation of data from the above activities to be used to determine future remediation activities. On May 15, 1997, the Regional Board issued a General National Pollutant Discharge Elimination System (NPDES) Permit for the discharge of treated groundwater. Implementation of the remediation system was to commence by May 24, 1997. On May 22, 1997, an extension until June 9, 1997, was granted to Mobil to commence on-site recovery and treatment of polluted groundwater. On June 13, 1997, a time extension until June 30, 1997, was granted to Mobil to commence on-site recovery and treatment of polluted groundwater. On August 11, 1997, Mobil was directed to commence on-site recovery and treatment of polluted groundwater by October 6, 1997. The on-site groundwater recovery and treatment system became operational on October 6, 1997. The on-site remediation system currently operates at an average pumping rate of 3.1 gpm. During the first month of operation (October 6, 1997 to November 6, 1997) approximately 117,828 gallons of contaminated groundwater from the shallow groundwater bearing zone immediately underlying the site was recovered, treated, and discharged to the sanitary sewer under an Industrial Waste Permit from the City of Los Angeles. During this period of time, approximately 20 pounds of MTBE was reportedly recovered. Based upon information contained within the "Interim Measures Groundwater Extraction and Treatment System Evaluation Report," dated November 17, 1997, the existing low flow (approximately 3.1 gallon per minute) groundwater recovery system can not contain the contaminated groundwater to the site, as required. As required, by the Regional Board, a proposal was submitted by Mobil on November 17, 1997, to expand the groundwater recovery system by pumping existing off-site shallow zone monitoring wells.

16. On May 16, 1997, preliminary test results from the completion of approximately 30 shallow soil test borings/geoprobes are submitted to the Regional Board. These preliminary analytical test results identified a widely spread soil contamination plume containing gasoline constituents, including MTBE up to 42,000 µg/kg, resulting from leaks and/or spills at the subject site. A site specific Source Removal Plan was required to be submitted by June 2, 1997. On June 2, 1997, Mobil submitted a Soil Excavation Workplan for the subject site. On June 13, 1997, the Soil Excavation Workplan was conditionally approved with a due date to submit the final technical report by August 29, 1997. A site specific soil cleanup level of 40 µg/kg was required for the site based upon "A Technical Modeling Case Study for MTBE Soil Cleanup Levels-California Regional Water Quality Control Board-Los Angeles Region." Regional Board letter dated August 11, 1997, extended the due date to submit the final technical report for the on-site soil excavation and cleanup operation until December 5, 1997. Approximately 2,000 cubic yards of gasoline contaminated soils, containing MTBE, have been excavated at the site and removed to the Mobil Refinery for final treatment. The "Site Decommissioning and Soil Excavation Report dated December 5, 1997, is currently under review.
17. On July 11, 1997, Mobil submitted a letter report containing a proposal to conduct a Short-Term Aquifer Pump Test (24-Hour). The Short-Term Aquifer Pump Test Workplan was conditionally approved on July 23, 1997, with a due date of August 4, 1997, to submit the final technical report. The due date for submitting the final technical report for the Short-Term Aquifer Pumping Test was



extended until October 10, 1997, by Regional Board letter dated September 26, 1997. The short term aquifer pumping test was completed on September 17, 1997, and the "24-Hour Pumping Test Final Technical Report With Results of Depth-Discrete Sampling," was received on October 14, 1997. Regional Board review and evaluation of this technical report concluded that the Long-Term Pumping Test was still necessary and also required that a Revised Final Technical Report 24-Hour Pumping Test was needed to provide additional information and explanations on work completed. The Regional Board issued letter dated November 7, 1997, directing Mobil to proceed with the Long-Term Pumping Test by November 21, 1997, and to submit a Revised Final Technical Report 24-Hour Pumping Test to the Regional Board by November 21, 1997. On November 21, 1997, Mobil submitted a letter report responding partially to Regional Board directives. On December 10, 1997, the Regional Board issued a letter to Mobil stating that the letter report submitted on November 21, 1997, was not responsive to requirements and directed Mobil to submit a Revised Phase 2A Investigation Technical Report by **January 16, 1998**. On December 23, 1997, in response to a verbal request by Mobil, an extension of one additional week, until **January 23, 1998**, was granted to submit the Revised Phase 2A Investigation Technical Report.

18. To date Mobil has not commenced work to complete the Long-Term Pumping Test, as directed. The Long-Term Pumping Test is intended to stress the deep aquifer at the Arcadia Wellfield site and beneath the former Mobil Site. This will allow evaluation of all potential pathways that have allowed pollutants to migrate from the shallow soil and water zone into the deeper drinking water aquifer. The results of the Long-Term Pumping Test are also required to verify that the ongoing remediation effort is effective and to indicate any modifications that may be needed.
19. The Phase 2A Investigation Workplan (Section 2.4), dated March 21, 1997, included a work component to complete subsurface geophysical surveys in the area surrounding the Arcadia Wellfield. On April 11, 1997, the Regional Board issued a letter stating, in part, that additional information was needed to complete our review of the geophysical work. On April 22, 1997, Mobil submitted a workplan addendum and the Initial Geophysical Survey Workplan was conditionally approved on May 22, 1997, with a final technical report due by June 30, 1997. Mobil's report containing the results of the Initial Geophysical Survey was received on July 3, 1997, and contained a Workplan for Additional Geophysical Survey. The Workplan for Additional Geophysical Survey was conditionally approved by the Regional Board on July 31, 1997, with a final technical report due by August 22, 1997. On August 5, 1997, Mobil submitted a request for additional time to implement the Workplan for Additional Geophysical Survey. Additional time was granted by the Regional Board until September 18, 1997, and again until October 17, 1997, to submit the final technical report containing results of the Additional Geophysical Survey. On October 14, 1997, Mobil requested until November 26, 1997, to submit the final technical report on the Additional (Surface and Downhole) Geophysical Survey. On October 16, 1997, the Regional Board issued a letter requiring that the final technical report on the Additional (Surface) Geophysical Survey be submitted by October 17, 1997, and that the final correlated technical report for the Additional (Surface and Downhole) Geophysical Survey be submitted by November 7, 1997. On October

17, 1997, and on November 7, 1997, the respective final technical reports on the Additional (Surface and Downhole) Geophysical Survey were received. Regional Board review and evaluation of the correlated final technical report for Additional (Surface and Downhole) Geophysical Survey determined that the report was incomplete and contained minimal interpretations. The Regional Board issued letter dated December 5, 1997, directing Mobil to submit a Revised Geophysical Investigation Final technical report by **January 16, 1998**.

20. On July 23, 1997, Mobil submitted a Phase 2A Investigation Workplan Supplement for Former Mobil Service Station 18-LDM, which proposed, in part, to perform depth-discrete sampling at Arcadia Wells No. 4 and No. 5. This workplan was conditionally approved on August 11, 1997. Monthly depth-discrete sampling at Arcadia Wells No. 4 and No. 5 commenced on August 19, 1997, and is anticipated to be completed during January 1998. Preliminary results from the limited data received to date from the depth-discrete sampling indicate that no TPH<sub>G</sub> and/or BTEX has been detected in the depth-discrete samples obtained at Arcadia Wells No. 4. or No. 5. No MTBE was detected in the depth-discrete samples obtained at Arcadia Well No. 4. MTBE has been detected up to 8 µg/L in depth-discrete samples obtained at Arcadia Well No. 5.
21. On March 17, 1997, Mobil submitted a Workplan for Interim Mitigation Measures for Mobil Oil Service Station 18-LDM (Interim Mitigation Measures Workplan). On April 24, 1997, the Interim Mitigation Measures Workplan was conditionally approved, with a date of May 24, 1997, to commence onsite groundwater recovery and treatment operations. On June 13, 1997, an extension was granted until June 30, 1997, to commence onsite recovery of polluted groundwater in accordance with Item B2 of the Consent Agreement ( File No. 97-005). On August 11, 1997, an extension was granted until October 6, 1997, to commence onsite recovery and treatment of polluted groundwater in accordance with Item B2 of the Consent Agreement (File No. 97-005). The August 11, 1997, Regional Board letter required that a technical report documenting the results of the initial evaluation and the system effectiveness be submitted by November 17, 1997. The initial technical report, Interim Measures Groundwater Extraction and Treatment System Evaluation Report was received on November 17, 1997. Regional Board staff review and evaluation of this technical report concluded that the report was incomplete due to incomplete data submissions, hydrogeologic and modelling assumptions that did not support the data provided, and interpretations were contradictory or inappropriate when evaluating the model used and the hydraulic flow regime identified in the shallow groundwater in the area surrounding the site. In addition, it was concluded that the existing groundwater recovery system was incapable of containing contaminated groundwater to the site, as required, and that additional onsite and offsite recovery wells were needed to further reduce impacts from MTBE discharged by Mobil. The Regional Board issued letter dated January 7, 1998, directing Mobil to conditionally proceed with work proposed to connect additional offsite groundwater monitoring wells (converted to extraction wells) to the existing groundwater recovery and treatment system, and to submit a Revised Technical Report Interim Measures Groundwater Extraction and Treatment System, by **February 13, 1998**.

22. Mobil has failed to meet conditions for implementing and completing all required assessment work as specified in the approved Phase 2A Investigation Workplan according to the schedule approved of the Executive Officer.
23. Section 13304 of the California Water Code states, in part, that:

"Any person.... who has caused or permitted to cause....any waste to be discharged or deposited where it is, or probably will be discharged into the waters of the state and creates, or threatens to create, a condition of pollution or nuisance, shall upon order of the Regional Board clean up such waste or abate the effects thereof or, in the case of threatened pollution or nuisance, take other necessary remedial action."
24. This action is being taken for the protection of the environment and as such is exempt from the provisions of the California Environmental Quality Act (Public Resources Code, Section 21000, et. seq.) in accordance with Section 15321, Chapter 3, Title 14, California Administrative Code.

IT IS HEREBY ORDERED, pursuant to California Water Code, Section 13304, that Mobil Business Resources Corporation shall adequately assess, monitor, report, and cleanup and abate the effects of gasoline, including MTBE, discharged to soil and groundwater.

A. PHASE 2A INVESTIGATION ASSESSMENT ACTIVITIES/ EXTENT OF CONTAMINATION

A partial Phase 2A Investigation Technical report has been submitted by Mobil to date. The pathway investigation and evaluations have not been completed, the long-term pumping test has not been completed, incomplete final technical reports have been submitted for both the geophysical survey and short-term aquifer pump test components of the Phase 2A Investigation, and data from boring logs and sampling of all groundwater monitoring wells required to be installed under the Phase 2A Investigation has not been submitted. A technical report detailing the results of all Phase 2A Investigation that includes installation, logging and sampling of all groundwater monitoring wells and soil borings, review of historical documents, and preparation of improved maps must be submitted to this Regional Board.

1. Submit a Revised Geophysical Investigation Technical Report, by **January 16, 1998**, in accordance with Regional Board directives outlined in letter dated December 5, 1997.
2. Submit a Revised 24-Hour Pumping Test Final Technical Report with Results of Arcadia Wells No. 4 and No. 5 Depth discrete Sampling, by **January 16, 1998**, in accordance with Regional Board directives as outlined in letters dated November 7, 1997, and December 10, 1997.
3. Begin implementation of the approved Long-Term Aquifer Pump Test by **January 26, 1998**.

4. Submit a Revised Phase 2A Investigation Technical Report by **January 23, 1998**.

5. Submit monthly groundwater monitoring reports according to the following schedule:

<u>Sampling Period</u>	<u>Report Due</u>
a. December 15-19, 1997	<b>January 30, 1998</b>
b. January 12-16, 1998	<b>February 27, 1998</b>
c. February 9-13, 1998	<b>March 27, 1998</b>
d. March 2-13, 1998	<b>April 24, 1998</b>

Subsequent to completion of the March 1998 monthly groundwater monitoring program, the monitoring program shall revert to quarterly according to the following schedule:

<u>Sampling Period</u>	<u>Report Due</u>
April-June	<b>July 1<sup>st</sup></b>
July-September	<b>October 1<sup>st</sup></b>
October-December	<b>January 1<sup>st</sup></b>
January-March	<b>April 1<sup>st</sup></b>

Groundwater monitoring reports shall contain at a minimum, but not be limited to: a narrative summary of work activities completed, the analytical test results from groundwater sampling in a tabular summary format, biweekly gaging data, isoconcentration maps for TPH<sub>G</sub>, BTEX, and MTBE in all zones monitored, groundwater contour maps depicting hydraulic gradient(s) and direction(s) of flow in all zones monitored, field logs from well purging, hazardous waste manifests and/or hauler reports for the disposal of wastes generated, evaluation of analytical test results, and an evaluation of the need for any additional hydrogeologic assessment that may be needed to determine the full extent of groundwater pollution (TPH<sub>G</sub>, BTEX, and MTBE) in the area surrounding the Arcadia Wellfield.

6. Submit by **January 28, 1998**, a Supplemental Phase 2B Hydrogeologic Assessment Workplan to determine the full extent of MTBE pollution impacting the Arcadia Wellfield area.
7. Submit a Final Comprehensive Phase 2A Investigation Technical Report containing the results of all work completed under Phase 2A Investigation Workplan, including the completed Pathway Investigation and the Long-Term Aquifer Pumping Test by **April 6, 1998**.

B. CLEANUP AND ABATEMENT ACTIVITIES

1. INTERIM MITIGATION MEASURES ACTIVITIES

- a. In order to further reduce the potential for downward migration of MTBE containing groundwater within the well casing of Arcadia Well No. 1 from migrating to deeper depths, and in order to remove additional mass of MTBE from groundwater, Mobil is hereby directed to install a shallow temporary casing within Arcadia Well No. 1. Prior to the installation of the temporary casing, fill material within Arcadia Well No. 1 shall be removed to a depth of approximately 30 feet below existing grade (approximately 15 feet below the current depth to solid material inside the well casing) without damaging the well casing. A super sucker type method may be appropriate for the removal of this material, however, the method used must provide a level of protection needed so that no damage to the casing occurs. This temporary recovery well shall be pumped continuously (24 hours per day) at a sustainable rate of approximately 5 gpm for 5 days immediately prior to implementing the long term aquifer pumping test. The temporary casing shall be installed approximately 15 feet below the existing groundwater level and shall be 4 to 6 inches in diameter. Groundwater recovered can be treated at the existing groundwater treatment system or be contained for legal disposal off site. At a minimum the water level shall be gaged daily and water samples shall be taken on a daily basis and analyzed for TPH<sub>G</sub>, BTEX, and MTBE. Additional water samples may be taken at Mobil's discretion. The results of any additional sampling and analysis shall be submitted with Mobil's technical report on this activity. The limited pumping at Arcadia Well No. 1 shall commence no later than **January 19, 1998**. The technical report containing the results of this work is due to this Regional Board by **March 9, 1998**.

2. CONTAINMENT OF CONTAMINATED GROUNDWATER FLOW FROM THE SITE.

- a. Mobil submitted the first technical report "Interim Measures Groundwater Extraction and Treatment System Evaluation Report," on November 17, 1997. This technical report contains the results of the initial evaluation of the on-site groundwater recovery and treatment system effectiveness including the monitoring network and results of monitoring, groundwater treatment, and discharge. The technical report documents that the low flow groundwater recovery system using only one recovery well (MW3R) is not adequate to contain contaminated groundwater flow to the site. A proposal to include up to two additional

groundwater extraction from off-site groundwater monitoring wells was included as part of the Interim Mitigation Measures Groundwater Extraction and Treatment System Report. Mobil's proposal to expand the Interim Mitigation Measures Groundwater Extraction Treatment System was conditionally approved **January 7, 1998**, in order to expedite additional interim mitigation measures. A Revised Technical Report Interim Measures Groundwater Extraction and Treatment System Report is due by **February 13, 1998**. Interim Mitigation Measures specified in Item 1a above are to be implemented and completed prior to adding additional groundwater flow into the treatment system from wells RMC-3, RMC-4, RMC-5, RMC-7, and/or RMC-8.

3. COMPREHENSIVE REMEDIAL ACTION PLAN

- a. A Comprehensive Remedial Action Plan (RAP) containing Mobil's plans to cleanup all soils and/or groundwater impacted by gasoline constituents (including MTBE) at the subject site and in the area surrounding the Arcadia Wellfield in order to return the Arcadia Wellfield to full production with an appropriate time schedule. is due by **April 30, 1998**.
- b. In addition, a Treatment Feasibility Study shall be prepared in order to evaluate potential interim solutions to groundwater treatment while the aquifer is being restored to it's designated beneficial use. The Treatment Feasibility Study id due by **April 30, 1998**.

4. MONTHLY ASSESSMENT AND CLEANUP PROGRESS REPORTS

- a. To ensure that all remaining work at the facility, the areawide assessment, and on-site and off-site cleanup is completed in a timely manner, monthly reports of progress are required. Mobil's first report under this schedule is due by **February 1, 1998**. Reports shall include at a minimum, but not be limited to the following information: 1) a discussion of all completed activities and on-going work activities during the reporting period; 2) a discussion of proposed work activities for the next reporting period; 3) an updated time schedule for completion of all work activities needed to complete the project including all assessment and cleanup activities needed to restore the Arcadia Wellfied to full operation; 4) the results of any soil and/or groundwater monitoring completed during the reporting period.
- b. To ensure that the interim measures are implemented in an efficient and effective manner, monthly cleanup status and progress reports must be submitted to this Regional Board, USEPA, and the City. Mobil's first report under this schedule is due by **February 1, 1998**. Monthly assessment and cleanup progress reports must include, at a minimum, the amount of extracted groundwater, volume of extracted free product,

analytical test results from influent, intermediate, and final treated effluent, the location of discharge, number of days of system operation during the reporting period, system maintenance completed during the reporting period, an evaluation of the effectiveness of containment of groundwater flow to the site, and any modifications and/or charges needed to the groundwater recovery and/or treatment system.

C. PROHIBITIONS

1. The discharge of wastes or hazardous substances in a manner which will degrade water quality or adversely affect beneficial uses of water of the State is hereby prohibited.
2. The groundwater shall be extracted from the subject site such that the flow of groundwater off-site is prohibited.
3. Further significant migration of wastes or hazardous substances through subsurface transport to waters of the State is prohibited.

D. PROVISIONS

1. No Nuisance: The storage, handling, treatment or disposal of contaminated soil and/or polluted groundwater shall not create a condition of nuisance as defined in California Water Code Section 13050(m).
2. Operation and Maintenance: The discharger shall maintain in good working order and operate as efficiently as possible any control or remediation system(s) installed to achieve compliance with the requirements of this Order.
3. Consultant Qualifications: All investigations must be conducted by, or under the direct supervision of a California Registered Geologist, Certified Engineering Geologist, or Registered Civil Engineer, with the appropriate experience.
4. Laboratory Qualifications: All analytical data must be reported by a California certified laboratory as shown on the enclosed laboratory report forms (10A/B).

E. RESCISSION

1. This Order supersedes and rescinds the Consent Agreement for Cleanup and Abatement Activities between the Regional Board and Mobil (File No. 97-005), dated February 18, 1997.

This Order in no way limits the authority of the Regional Board, as provided by the California Water Code, to require additional investigation, cleanup or abatement

pertinent to this project. This Order may be revised by the Executive Officer as additional information becomes available.

For good cause shown, the Executive Officer may grant an extension of time as to the deadlines provided herein. Such requests, however, must be made in writing and submitted prior to the deadline.

Failure to comply with the terms and conditions of this Order may result in the imposition of civil liability, either by the Regional Board or judicially by the Superior Court, in accordance with Section 13350 et. seq., of the California Water Code and/or referral to the Attorney General of the State of California for such legal action as he may deem appropriate.

Date: January 7, 1998

Officer

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DENNIS A. DICKERSON, Executive

California Regional Water Quality  
Control Board, Los Angeles Region